Joint MPH program University of Gondar and Addis
Continental Institute of Public health

Trachomatous Trichiasis Prevalence and factors affecting Trichiasis Surgery utilization in Yilmana Densa Wordeda West Gojjam Administrative Zone

---

by

Mulat Zerihun

Primary Advisor: Dr Abera Kumie

Secondary Advisor: Alemayehu Gebre

A Thesis Submitted to School of Public Health University of Gondar with Partial Fulfillment of the Requirement for The Degree of Master of Public Health

December 2010 Gondar, Ethiopia

UNIVERSITY OF GONDAR
COLLEGE OF MEDICINE AND HEALTH SCIENCES
SCHOOL OF PUBLIC HEALTH

Title: Trichiasis Prevalence and factors affection Trichiasis Surgery utilization in Yilmana Densa Wordeda West Gojjam Administrative Zone

By

Mulat Zerihun
Addis Continental Institute of Public Health and School of Public Health
University of Gondar

Approved by the Examining Board

_____ _____
Chair, Dep. Graduate Committee

_____ _____
Advisors

_____ _____
Examiner

_____ _____
Examine

Acknowledgment

I wish to extend my heartily thanks to ACIPH and University of Gondar who brought the MPH program to my door in the time I lost the hope of having such advanced study because of the blessing of my age.

My sincere appreciation goes to Dr Abera Kumie, primary advisor, for his enthusiastic and dedicated work in assisting me for the fulfillment of the research work from beginning to end.

I forward my gratitude to West Gojjam Zone health department, Yelmana densa Woreda health office, Dr Dereje Shimelse (data collectors' trainer ophthalmologist), and all participants who provided me limitless support during data collection.

I like to express my indulgence to the Carter Center Ethiopia for fully funding the research work.

I thank Ato Teshome Gebere, The Carter center Ethiopia Country representative, Ato Demelash Gessese and Ato Ferew Ayalew, The Carter Center Ethiopia staffs, for their personal contributions

I have special impression for my classmates particularly students whom I worked with, in group assignments, more importantly students who were advised by Dr Abera Kumie.

I can not wind up before disclosing the secret of my strength, My wife Sr Nigist Tesfu and my four children, who shared with me every sorrow and happiness in the last two years of my study time.

Last, the Almighty is great!!

Acronyms

BLTR	Bi-Lamellar Tarsal Rotation
CO	Corneal Opacity
GET 2020	Global Elimination of Trachoma by 2020
HEW	Health Extension Workers
HH	House Hold
MalTra	Malaria and Trachoma
PLTR	Posterior Lamellar Tarsal Rotation
RCT	Randomized Controlled trial
SAFE	**S**urgery, **A**ntibiotics, **F**acial cleanliness and **E**nvironmental improvement
SRS	Simple Random Sampling/Selection
TF	Trachomatous Inflamation Folicular
TI	Trachomatous Inflamation Intense
TT	Trachomatous Trichiasis
WHO	World Health Organization

Table of Contents

List of Figures

List of Tables

List of Annexes

Abstract

Background: About 1.2 million people have trachomatous trichiasis (TT) in Ethiopia. Amhara region harbors almost half the victims of the nation (640,000 TT backlog).

Objectives: The objective of this study was to determine the prevalence of trachomatous trichiasis and factors affecting TT surgery utilization in Yelmana Densa woreda

Method: The design of this study was cross sectional. All 33 rural kebeles of the study woreda were part of the target population. From the randomly selected 11 kebeles 1100 sampled households were selected for the study. A pre-tested structured questionnaire and eye examination used to collect the required data. Data was double entered in Epi info 3.3.2 by two separate data encoders. Analysis was done using SPSS version 15.0. Bivariate & Multivariate logistic regression analysis introduced to analyze the data

Result: Prevalence of TT in the woreda found to be 3.8%, 95% CI (3%-4%). Socio-demographic and environmental factors such as: absence of radio presence of Cattle in households and unsafe water supply had association in the bivariate and multivariate logistic regression analysis, OR (95%CI): =1.991 (1.198, 3.309); 1.654 (1.014, 2.698); 3.256 (2.189, 4.842) respectively. For low surgery uptake the main affecting factors were: lack of awareness on the presence of the service 18(17.3%), fear of surgery 18(17.4%) lack of knowledge about the presence of the problem 15(14.3%), distance of service provision sites 12(11.25%).

Conclusion: Absence of radio in households, use of unsafe water and presence of cattle in families showed significant association as risk for the presence of TT in a family.

Recommendation: Political leaders, woreda health office and partners should work hard for the availability of improved water access to households in the woreda where it is lacking. HEWs development agents other partners should advise families with cattle to keep their cattle's night place clean in order to void breading of flies. Advising families, who are capable of buying radio, found relevant to have the access to radio in order to decrease the presence of TT in a family.

Introduction

1.1 Statement of the problem

Trachoma, a chronic kerato-conjunctivitis, is caused by Chlamydia trachomatis. It is a disease of poor, underprivileged, and socio-economically disadvantaged communities and affects people who have little or no say in public decision making. (1).

Developmental achievements in the economical and societal brought big change for the control of the disease and it was long ago eliminated in North America and Europe. Currently the disease is almost unknown, and indeed forgotten, in the West. (2)

As the result of a concerted effort by the WHO Alliance for the Global Elimination of blinding Trachoma (GET 2020) combined with socioeconomic development, in endemic countries, the estimated number of people affected by trachoma has fallen from 360 million people in 1985 to approximately 80 million people in 2006. (3)

Today trachoma remains the world's leading cause of preventable blindness. Endemic in the poorest regions of Africa and Asia, it plagues the developing world, affecting 41 million people in 56 countries. Worldwide, trachoma has impaired the vision of or completely blinded 8 million people. (3)

Under WHO designed "Vision 2020 The right to sight". The Alliance for the Global Elimination of Trachoma by 2020 (GET2020) has adopted the SAFE (Surgery, Antibiotics, Facial cleanliness and Environmental improvement) strategy as the main action against trachoma. (4) From its very nature once the presence of trichiasis confirmed there is no any preventive method other than surgery. Trichiasis surgery reduces the risk of blindness by reversing the in-turning of eyelashes and also improves the quality of life from non-visual symptoms. (4)

According to the national survey conducted in 2006 in Ethiopia, trachoma identified to be second cause of blindness with 11.5% prevalence rate. (5) The national prevalence of active trachoma, (either Trachomatous inflammation follicular (TF) or Trachomatous inflammation Intense (TI)) in children in the age group 1-9 years is

40.1%. (5) The rural prevalence of active trachoma is almost fourfold compared to the urban and the national prevalence of Trachomatous Trichiasis (TT) is 3.1% with the highest in the Amhara region. (5)

Amhara region is trachoma hyper endemic in the country with prevalence of active trachoma (62.6%) in children 1-9 years old and TT prevalence of 5.2% in people 15 years old and above. (5) High trachoma prevalence of Amhara region was re-confirmed in another survey conducted in 2006/7 by The Carter center and regional health bureau. In the later survey, regional active trachoma prevalence was estimated to be 32.7% with TT 6.2% having total backlog of 645000. In the same survey West Gojjam zone active trachoma prevalence was estimated to be 33.1 % and TT at 10%, the highest in the region. (6)

1. 2. Rationale

TT prevalence of West Gojjam Zone is shared by all 15 Woredas of the Zone (10%). Backlog (none operated) TT patients in the study Woreda estimated to be 11938. Following the baseline survey conducted in 2006/7, 6 lid surgeons trained and deployed in different health facilities of the Wored. In The Carter Center assisted malaria and trachoma control (MalTra) project period (2007-2009) only 165/11938 (1.4%) people reported to be served in the free lid surgery program. (7). No one studied why low performance recorded in the presence of such huge backlog.

Trachoma survey done in 2003 in the study Woreda estimated TT prevalence to be (6%) and 4468 cases operated from 2004-2006 in the previous Yelmana Densa Woreda. Since 2006/7 Yelmana Densa Woreda divided into two and Gonge Kollela Woreda formed with total population 112,270. Currently 10% TT prevalence of West Gojjam zone is used for intervention in all 15 Woredas, including the study area. This marked difference deserves further assessment.

Studies so far done in different countries, including Ethiopia, revealed that TT surgery utilization can be affected by different factors like: lack of knowledge (information), service distance, fear of surgery, fear of direct and indirect cost, lack of companion, lack of confidence on surgeons etc.(8-13) This study endeavors to investigate factor/s which may affect service utilization in the study Woreda.

3. Literature Review

3.1 Overview of the problem

Trachoma is the leading infectious cause of blindness worldwide. Approximately 2 million people are estimated to be blind from the disease worldwide. (14) It begins in childhood with recurrent episodes of chronic follicular conjunctivitis due to *Chlamydia-trachomatis* infection. Chronic inflammation promotes tarsal conjunctival scarring; leading to entropion, trichiasis, corneal opacification and blindness. (14) The World Health Organization (WHO) is leading a global effort to control blinding trachoma by 2020 through implementation of the SAFE strategy: (Surgery for trichiasis, Antibiotic distribution for chlamydial infection, Facial cleanliness, and Environmental improvements to reduce transmission). (14)

Although its prevalence in certain areas is declining, trachoma continues to account for at least 3.6% of world blindness, making it one of the leading causes of preventable blindness. (15)

The majority of blindness from trachoma is currently reported from sub-Saharan Africa, with the greatest burden in Ethiopia. (16) Globally it is estimated that approximately 500 million people are at risk of trachoma. There are about 40 million people with active ocular Chlamydia infection and 8.2 million with severe blinding trachoma (trichiasis). (16, 17)

WHO demarcated TT to be prevalent in population 15 years and older. On the other hand results from surveys conducted in Egypt and Ethiopia showed that detecting cases below 15 years is not uncommon. In a study conducted in Egypt Trachomatous trichiasis was detected in children as young as 10 years old, (18) and it was also observed in children aged less than 15 years in the age group 0-14 years, ranging from 0% in North Gondar to 0.8% (95% CI 0.3-1.8) in North Wollo.of Amhara region, Ethiopia. (5)

3.2 What is trichiasis?

An eyelash or simply lash is one of the hairs that grow at the edge of the eyelid. Eyelashes protect the eye from debris and perform some of the same function as

whiskers do on a cat or a mouse in the sense that they are sensitive to being touched. The Greek word for eyelash is "blepharis". This word is often used as a root in biological terms (Blepharis, Kathablepharis, etc.). (19)

Therefore trichiasis is a disease of the eye in which the eyelashes, being turned in upon the eyeball, produce constant irritation by the motion of the lids. **(19)**

Or Trachomatous Trichiasis (TT) means at least one eyelash rubs on the eyeball. (Evidence of recent removal of in turned eyelashes should also be graded as trichiasis). (16, 17)

Trachoma originates from an eye infection that is spread from person to person and it is frequently passed from child to child and from child to mother within the family, especially in environmental conditions of water shortages, flies, and crowded households. (3).

Repeated infections cause trachomatous scarring which may result in entropion (inward deviation of the eyelid) and trichiasis (in-turned lashes). Trichiasis primarily affects adults, although it can be seen in young children in hyper-endemic communities. (20) Data suggest that persons at greatest risk of developing trichiasis are individuals with scarring and active or persistent infection. (20) This being reality, knowledge of what drives the cicatricial process especially in regions where C. trachomatis infection is less common is limited.

3.3 What practices used to treat trichiasis?

Different practices introduced to decrease discomfort and irritation from trichiasis. Among these epliation and cauterizing with fire are some to be mentioned. Trichiasis patients typically carry around a tweezers-like instrument and will have one of their family members pluck their in-turned eyelashes on a regular basis. (20)
Some studies advise not to take epilation as a substitute for surgery, since a significant proportion of epilated eyes with severe entropion have corneal opacity.

(21) Furthermore such studies suggest, epilation may not be helpful even for eyes with mild entropion. This lack of an association has potential ramifications for countries that recommend delaying surgery. (21)

No study has compared these two approaches (11) and this complicates the problem of deciding in choosing epilation over surgery. Considering such unclear conditions researchers advised to conduct further research into the role of epilation in preventing Corneal Opacity (CO). (21)

The WHO advocated surgery, for trachomatous trichiasis, is believed to prevent blindness from trachoma. TT surgery introduced as part of the SAFE strategy for the global elimination of trachoma and yet Trachomatous trichiasis remains a major cause of blindness worldwide, even with the expansion of trachoma-control programmes. (8) Trichiasis is expected to remain a public health problem in communities endemic for trachoma for at least another 20 years. (8) The long time period between active disease and subsequent trichiasis probably means that trichiasis surgery will be required long after control of the active disease has been achieved. (8)

3.4 Benefits of TT surgery

Many study results assured that surgical correction of TT is believed to reduce the risk of progressive CO and blindness. (10) Studies conducted in the Gambia depicted that corneal opacities developed in the course of TT gets decreased after surgery and improved vision obtained.

3.5 Who are more in need of the service?

Women and girls are the primary caregivers in most societies in developing countries. Proximity to children exposes women to repeated infection more than men and is likely a primary reason for the greater effect of active disease. (22) Among victims of trachomatous trichiasis, in many settings, women are two to four times as likely to have trichiasis. (10, 15) Women with trichiasis but no vision loss have been shown to have the same difficulty with daily activities as women who had vision loss from other causes. (13)

The fact that women account for at least two thirds of the trachoma blind in the world suggests that approaches to providing services need to be gender sensitive. Currently, the utilization of trichiasis surgical services has a sex equity imbalance. (8, 13, 18, 23, 24) Gender equity concerns can also be based on women having less access to money (for surgery or for travel or medical expenses), less time from chores to get surgery, more fear of the procedure and any unsightly after effects. (13)

Gender equity is a significant issue for the World Health Organization. Considerable resources are being directed to trachoma control in several trachoma endemic countries worldwide. These include the training of trichiasis surgeons, and infrastructure and staffing to identify cases and deliver village based surgery for trichiasis. If trichiasis surgical services are not being utilized by women, in proportion to their need, then the goal of eliminating avoidable blindness due to trachoma will not be achieved. (13,)

3.6 When to do surgery

The optimal management of early trichiasis remains unclear: Questions such as; is it better to perform early surgery or to defer until a more severe problem develops? is still undecided. (18, 25) This made lack of uniformity among programs to decide who needs TT surgery. Some advocate early surgery when one or more lashes touch the eye, whilst others practice epilation until more severe TT develops.

However a study reported the 4-year natural history of a cohort of Gambians with trachomatous trichiasis. During the study period some individuals had progressive disease with 29% of unilateral cases becoming bilateral and 37% of eyes with minor trichiasis developing major trichiasis. (18) An earlier study from The Gambia found faster rates of progression: during a 1-year period 46% of unilateral cases became bilateral and 33% of minor trichiasis progressed to major trichiasis. (12) In both studies CO was only found in eyes with trichiasis and new CO was associated with increasing severity of trichiasis, suggesting that this is the principal insult. In addition, an association was identified between new corneal opacities and conjunctival inflammation. (18)

The most important thing is to prevent/ to avoid vision loss. In areas where people do not have frequent contact with eye care services, surgery for mild disease is a logical approach. (11, 26)

3.7 Factors/Reasons for low service utilization

The reasons for the low utilization of the existing surgical services are not fully understood, and there is considerable variation between areas based on local conditions and cultural practices. (8) Although there is no charge for surgery, studies in Malawi, Ethiopia and Tanzania have reported that indirect costs, such as: time away from home and the need for a companion to travel with, pose barriers for those who need trichiasis surgery. (8, 10)

Individuals with minor trichiasis often decline surgery. Therefore, it would be useful to know whether by improving the quality of epilation through training and equipping community volunteers with good eyesight, so that the long-term visual outcome is as good as early surgery. (14)

Regarding outcome health facility-based surgery is likely to be of higher quality, owing to standardized procedures and better sterilization techniques, and is likely to be better integrated into general healthcare and eye-care services. For better acceptance and output village-based surgical service provision may be worthwhile in settings of high blinding trachoma burden. In a community based randomized controlled trial (RCT) from The Gambia the acceptance rate was 45 per cent higher with village-based TT surgery than with health centre-based surgery. (12, 27) It was also accepted that the cost to the patient was significantly less for those who had village-based surgery. (11-13)

Although service provision in the village believed to be more appropriate for better service utilization, still there could be clients who fail to benefit from the available service. The cross country study conducted on “The excess burden of trachomatous trichiasis in women” found that women who declined surgery did not know surgery in the village was available and the perceived cost and transportation difficulties continued to be barriers. (17) 50% of the non-acceptors stated that there was

nothing that would enable them to accept surgical intervention despite the fact that 3/4 of them reported eye symptoms that interfered with their daily activities. (17)

The reliability and responsibility of the trichiasis surgeon (being available at the health centre when agreed), quality of service (clinical quality as well as showing respect and compassion towards patients) and availability of surgical supplies are also critical to the success of programmes. (8)

Qualification of surgeon providing TT surgery service might compromise surgery uptake. In line with this the qualification level of surgeons was studied to see whether it contributes for TT recurrence or not. RCT in Ethiopia compared the results of TT surgery performed by trained nurses to those obtained by ophthalmologists, and found no difference in outcome. (11, 12) Another retrospective review of TT surgery in Morocco found that, of patients operated on by nurses, 12.3 per cent had recurrent disease at the time of follow-up. (11, 26) Significantly less than patients operated on by ophthalmologists, possibly because ophthalmologists tend to do more difficult cases. (26)

In December 2000 the Amhara Regional health Bureau, the Prevention of Blindness team of the federal Ministry of Health and The carter center conducted a community based trachoma prevalence survey in the four woredas of south Gondar(dera, Este, Ebinat and Simada). Survey result was consistent with reports that Ethiopia has extremely high prevalence of both active and blinding trachoma (TT). (7) In the study result it was estimated that there were 36,000 TT cases in need of surgery and 300,000 children (1-10year old) with inflammatory trachoma in need of antibiotic treatment. (7)

In another study conducted three years later (December 2003) in four zones (South Gondar 10 woredas) and North Gondar, East Gojjam and West Gojjam (three woredas in each zone) the result for TT was estimated to be 4.3-7%,7.5, 4.5% and 5.5% respectively. Estimated backlog of TT was South Gondar 58,262; North Gondar, 18,500; East Gojjam, 12475 and West Gojjam 24,402, a total of 113,639 cases were waiting for surgery in 19 intervention woredas under the four zones.(7)

In general the Ethiopian program set ambitious, needs-based targets for trachoma elimination, in 2008 while it tells short of surgical objectives, still achieved remarkable record output. (28) For Example, in 2008 the Carter Center supported trachoma control program targeted 101, 187/177,354 TT surgery of the national target and performed 31,561/63,262 (about 50%) of the national performance. (28)

In a study conducted on TT surgery uptake in Enbsie woreda of East Gojjam zone, in-turned eyelash (trichiasis) is locally known as “CHIROSH,” and this term was used to trace the maximum possible number of patients with trichiasis. (9) A total of 135 non-operated and 141 operated cases of trichiasis were interviewed. No significant differences were noticed in the socio-demographic characteristics between the cases and control except for distance from health facility. The main reasons given by patients who refused trichiasis surgery were burden of household chores (27.4%) and indirect cost of surgery (20%). Of 135 persons who did not have surgery, 109 said they would have surgery if it was easily accessible in their vicinity. The ones who still refused for the surgical treatment cited fear of surgery (3) and doubt surrounding the outcome (5), absence of a companion (5) (9)

3.8 How to scale up service

To this end studies conducted to set solution for such barriers affirmed that behavior change communication interventions targeted on early uptake of surgery, taking the service to the village were very important point mentioned. (12)

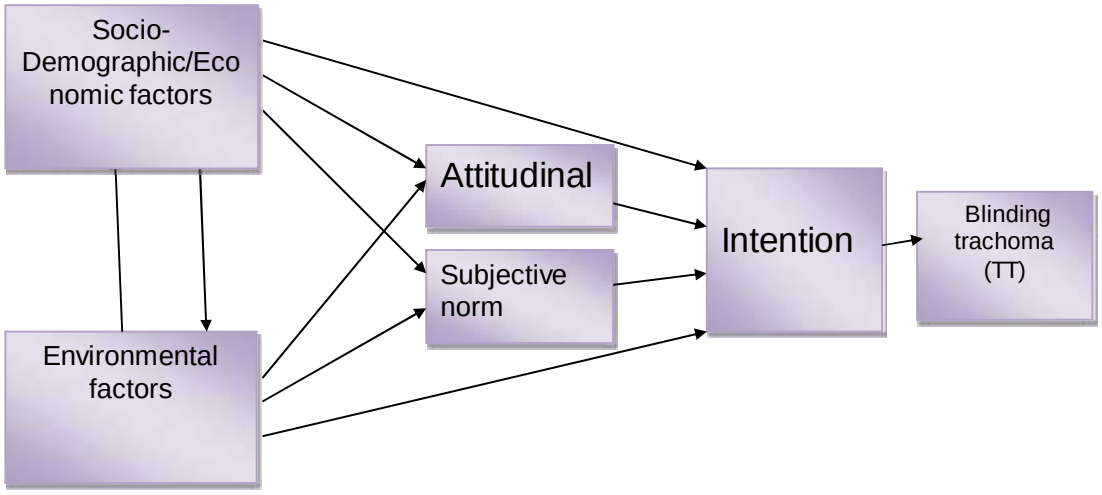
The usually expected promoters for TT surgery and other health service utilization are health workers and those who have related work or voluntarily service providers. In a study done in Tanzania it was found that village leaders and school teachers may be appropriate choices for promoting surgical intervention in rural settings as both groups have a level of credibility (because of age, educational attainment and status in the communities) that is often lacking for village health. (8)

In this regard meticulous observation and selection deserved to pin point such relevant people. The process of identifying individuals who are most likely to

influence elderly people (and their families) in rural communities is critical for any effort at improving awareness, access and acceptance. (8)

Key Words
Trachomatous Trichiasis, Blindness, TT surgery, TT surgery utilization,

Figure1: Conceptual Framework



1

Figurre 1: Map of Study woreda

Key: Names in bold and black are randomly selected study kebeles

4. Objectives

4.1 General Objective

The genera objective of the study was to determine trichiasis prevalence and to identify associated factors affecting TT surgery

4.2 Specific Objectives:

The specific objectives of the study were to:

- détermine prévalence of Trachomatous Trichiasis
- identify associated factors affecting Trachomatous Trichiasis surgery utilization

5. Methods

5.1 Study area

The study was conducted in Yelmana Densa woreda of West Gojjam administrative zone (the reason why this Woreda chosen was justified in the rationale). Woreda is located 45 kms East from Bahir Dar town, capital of Amhara national regional state. Structurally divided in to 36 kebeles (3 urban and 33 rural). Total population is, 228,548 of whom 113,131 male and 115,417 female (urban male 8073 female 8235 total 16308). Nearly 50% of the population is under 15 year old children. (7) 93 % of the population resides in the rural depending on farming. In the town there exists woreda health office with the responsibility of managing the health service in the woreda and there is one health center with total of 18 Health staff (health officers, Nurses, Laboratory technologists, Pharmacists/Pharmacy technicians, Midwives and 14 support staff. Two nurses trained as an Integrated Eye Care worker (IECW) for one month (one at Felege Hiowt and the other at debere Marcos hospital secondary eye units) were giving service to TT clients in routine and campaign services. Other three sites where IECWs used to be assigned are: Agita, Densa Bata and Gosheye health centers/health posts.

5.2 Study Design

The study was cross sectional using a quantitative study design.

5.3 Study population

All rural kebeles of the Woreda were included in the target/source population. All randomly selected household heads or spouses or other capable respondents in the selected households, operated and none operated TT cases of the selected households in the sample Gotts/Development teams, were study population. Woreda capital excluded from the target considering relative availability of service and better access to information and communication.

5.4 Sample Size Determination

Prevalence of TT in West Gojjam zone is 10% which is shared by all 15 woredas of the zone. (6) Since the prevalence is currently used for operational purpose, we used it to calculate the sample size of this study**.** Allowing margin of error of 3%, 95% confidence limit, a default value of design effect 2.5 (24) and accounting for 15% non-response rate, the minimum sample size of the study was estimated to be1100 households.

.The Mathematical sample size calculation was represented by the following formula

n= number of required sample size

Z= is standardized normal distribution value for 95% confidence interval with the value of 1.96.

p = proportion of population with trichiasis, 10%

s = the margin of error taken (3%) to maximize the sample

d = precision (margin of error) (=3%)

D=design effect (2.5)

$n=((za/2)^2\ p(1-p)\ /d^2)*D$

$(1.96)^2*0.1*.9/0.03^2)*2.5= 960.4$

+15% none respondent rate =960+ (15% *960= 144.06)=1104.46

Sample size of this study was taken to be 1100 households

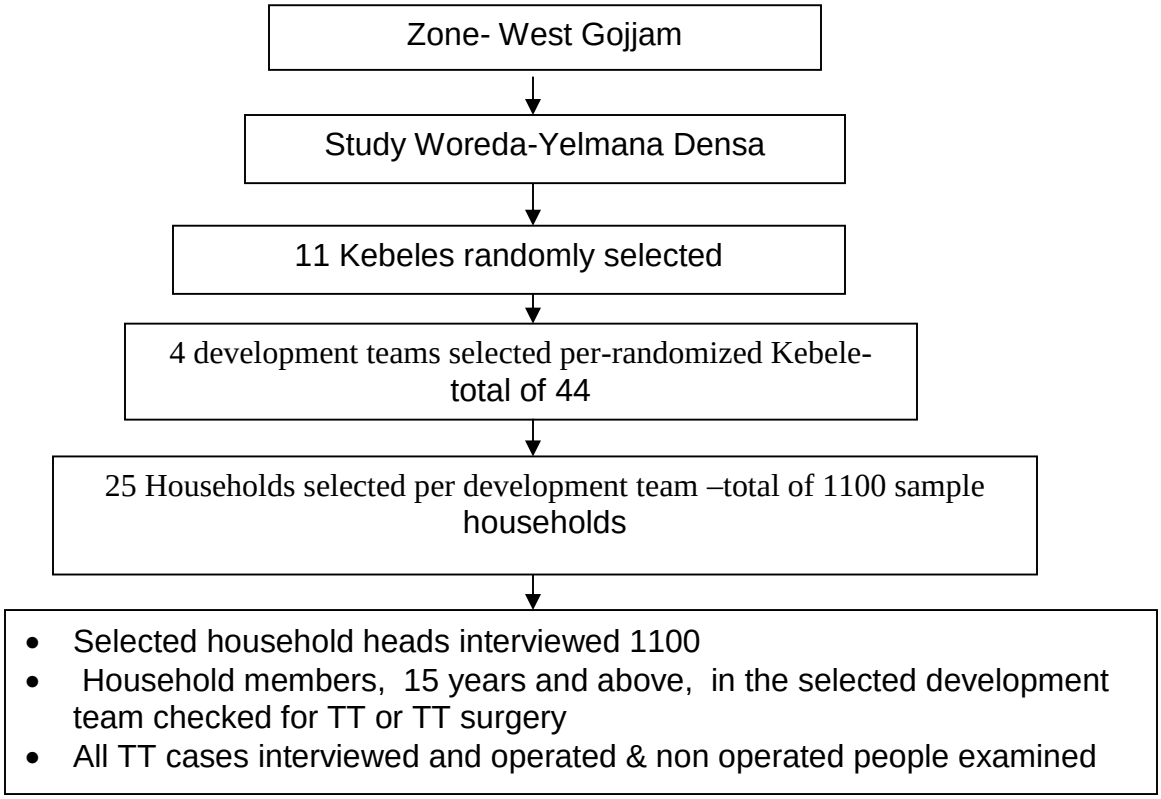
Proportion for Two Populations

Assuming 10% TT prevalence, 95% Confidence level, 80% Power, 2 Odds Ratio (OR) and addition of 15% none response rate gave 706 sample size. For this reason the single population proportion with larger sample size 1100 taken for this study.

5.5 Sampling Procedures

Multistage cluster sampling technique used to select the study households/sample population. In the first sampling stage 11 Kebeles selected by Simple Random Selection (SRS) method. In the second sampling stage, 4 development teams (a development team was estimated to constitute 35-60 households on average) selected from the list of development teams of each sampled Kebele. In the third stage, 25 households selected from each development team, making a total sample of 1100 households. All household heads/spouses/others capable respondents of the randomized households interviewed and all 15 years old and above sample family members examined for TT and for previous TT operation.

Figure 2: A Structure Showing Sampling Plan Summary



5.6 Data Collection Procedure and Study Instruments:

A structured, translated into local language and pre-tested questionnaire, eye lid examination, used to collect data. Interviews conducted by non health workers while eye lid examination handled by experienced integrated eye care workers using WHO simplified grading system developed for eye examinations (24).

In the case of questionnaires, interviewers deployed in a community outside the actual study area with similar socio-demographic and economic setting and interviewed five HH heads by applying the method of HH selection (Going at the center of the Got/development team and tossing a pen to choose the direction to follow and interviewed every other HH head). This questionnaire was used to collect data for triennial survey conducted by The Carter Center and Amahara regional Health Bureau in South Gondar and East Gojjam zones in 2008). (15) In both field pretests verbal consents obtained from every examinee and interviewee. .

5.6.1 Data Collection through Eye Examiners

A training manual developed and based on the schedule of the training, data collectors and supervisors took two days training. For eye examiners, the minimum accepted inter-observer agreement set at 80% and reliability assessed in two stages. (They took objective questions and eye examinations which were rated out of 100). In the first stage, trainee examiners identified TT grades using the WHO sets of trachoma slides. (4, 22) Those trainee examiners who achieved minimum of 80% agreement proceeded to the second stage of field evaluation. During field evaluation a reliability study comprising,,, 30 persons of varying age and gender selected. In the eyelid examination, data collectors observed whether eyelashes touched the eye ball or not while the eyes were in the normal gaze. To identify clearly, they used torch and magnifying loupe with +2.5 diopter.

Data collectors recruited based on their qualification and previous exposure in similar data collection activities. First day of the training spent on how to introduce the questionnaire and examine eye lids. Training on how to do eye lid examination was handled by an ophthalmologist and the questionnaires by the principal

investigator. On the second day, data collection tools pre-tested, in a village outside the study area having similar setting with the study woreda. During eye lid examination, the trainer ophthalmologist served as a gold standard. Since TT cases and operated people were spread out and difficult to easily access for the pre-test, TT surgery campaign organized in Motta rural hospital, East Gojjam zone (120 kms east from Bahir Dar), to get good flow of cases. There were forty TT cases gathered for the service. Three of them examined together with the gold standard and thirty of the cases examined by each examiner trainee individually. Their examination results corrected against the gold standard examination result.
Following the pre test all examiner and interviewer trainees discussed on the questionnaires and enriched the final questionnaire. Eye examiners rated at minimum of 80% and those who achieved above the minimum requirement qualified for the actual data collection.

Actual data collection took two to three days per kebele depending on the distance and topography of the selected kebeles. Three supervisors assigned and followed two teams each. Supervisors used their maximum effort to reach each team starting from the first day of data collection. In every kebele guides were assigned by kebele leaders or Health Extension Workers (HEWs). The guide stayed with the team until the data collection in his or her kebele completed. Based on this system total of 11 guides assisted the data collection team. Teams gave proper orientation for each guide as soon as they reached a new kebele.

Data collection in the randomized development teams followed uniform approach by all data collection teams. They routinely walked to find the center of randomly selected development teams and used to toss a pen. Following the ball point pen direction they collected the data by interviewing and examining people's eyes in every other HH. In times when sample development team boundary reached before collecting the required data they used to turn to the same development team following their right side and continued until they finished the intended sample size. This was a method use in National Blindness and Low Vision survey in Ethiopia in

2006. (5) To avoid HH confusion data collectors used to give number to sample households with chalk starting from number 001. The method continued until data collection in the sample clusters of the same kebele completed. In the new kebele HH numbering used to start from the initial. The HH numbers given using chalk were different from the serial numbers given to the whole questionnaire.

In every randomized HH all family members, above 15 year old, registered in a census format developed for this purpose (Census form Annex I: B) and attached with the questionnaire. Every registered dweller examined for TT or previous lid operation for TT.

5.7 Operational Definition

Trachomatous Trichiasis:- One or more eye lashes touching the Eye ball or

- History of epliation or cauterization also considered as Trachomatous Trichiasis.

TT surgery service utilization: The level of existing TT surgery service consumption by beneficiaries (TT cases).

- **Development team:** Administrative structure consisting of 25-60 households
- **Safe water source:** water point protected and free from contamination

5.8 Data processing and management

The collected and coded data entered in computer. To increase the data quality double data entry method applied by two different data encoders using Epi Info 3.3. 2. Cleaning also done in the Epi Info by comparing the two data entered while lying side by side. SPSS version 15.0 used to analyze the data. During data entry its quality was checked by principal investigator and experienced statistician randomly selecting 5% of the data entered.

5.9 Data Analysis:

. Frequency distribution, percentages, Association of variables used to test significance of the study. Bivariate and multivariate logistic regressions and odds ratio, 95% confidence interval introduced to calculate and to analyze the variables. Tables and figures were also used to display the results of the study.

5.10 Data Quality Control:

Standardized and pre-tested data collection tools developed and administered carefully. Eye lid examination applied according to recommended eye lid examination techniques. There was close supervision with trained supervisors. The principal investigator served as over all supervisor. In this regard spot checking made on how each team applied the data collection techniques. How supervisors gave supportive supervision was also critically assessed. Supervisors used to leave comments on the already prepared comment format which usually found with data collectors. By looking at written comments the principal investigator easily access information on how supervisors assisted data collectors and cross checked whether data collectors utilized comments given by supervisors.

5.10 Variables

5.10.1 Dependent Variables

- Prevalence of TT in the community
- TT cases who were not operated

5.10.2 Independent Variables

Factors affecting TT surgery service utilization such as:

- Service distance
- Lack of information
- Fear of direct and indirect cost
- Workload at home
- Lack of attendant from family during surgery
- Fear of surgery
- Lack of trust on surgeons etc.

6. Ethical consideration

Ethical clearance was obtained from ethical committee of University of Gondar and support letter issued by West Gojjam zone health department to study woreda. Study woreda distributed letter to randomly selected 11 kebele administrations to collaborate the study team by assigning a guide who knew the community very well. In the data collection process every subject of the study asked verbal consent before data collection. Each data collector consistently explained the points mentioned in the consent form and continued the activity after receiving agreement from subjects.

Study subjects were informed about the benefit of the study. Harmlessness of the eye examination clearly told to subject. Their privacies were also properly kept during interview and eye examination. All data collections were done in subjects' personal households where others could not access what they informed in the questionnaire and while their eyes examined. Study subjects were free to quit the interview or eye examination any time while the activity was progressing. At the end of data collection in every HH those who deserved treatment received tetracycline 1% eye ointment. Subjects found with eye problems which needed further medical service advised to go to the appropriate health institution with full information where they could access the service. Finally study participants clearly told that the information study subjects gave will be treated confidentially.

7. Dissemination of results

The study result will be taken back to the study woreda and displayed/presented to woreda health managers, political leaders and study community representatives. It will be also shared to the regional health bureau and zone health department. The funding agency will get a copy as well.

All efforts will be made to get it published for the benefit and better access to program planers and further research workers. Funding organization will be approached to work on the publication of this paper.

8. Results

8.1 Description about sample Kebeles and magnitude of TT

From the total 33 rural kebeles of the woreda randomly sampled 11 Kebeles reached and families harboring TT cases were identified. Most of the sample kebeles, 8(72.7%) were with reasonable distribution of cases of TT. The remaining 3(27.2%) were relatively outliers, maximum 20 and minimum 5 and 6, (Kebeles named: Gebesh, Aybar and Yegebeta kebeles respectively). The two kebeles with minimum number of none operated cases are located neighboring each other at distant from the capital of the woreda. . Although not as high as Yegebeta, Angar and Fetelo were following with relatively high number of cases (17 and 16 respectively). These two kebeles are geographically located neighboring Gebesh

In relation with surgeries done, more operated cases were reported from Gebesh lesser number from the two kebeles who we found in the study result with minimum number of none operated cases. In terms of absentees proportional, if not more cases seen absent from Gebesh. The reasons why this variation occurred in the kebeles with maximum andminimum especially kebeles with minimum cases may need further clarification.

8.2 Socio-Demographic characteristics

All randomized study sample households reached and 1100 household heads or family members, capable to responding the questionnaires were interviewed (this type of interviewing was applied during triennial survey conducted in 2008 in The carter Center assisted 5 MalTra project Woredas of South Gondar and east Gojjam Zones). (15) Among respondents 412 (37.4%) were HH heads, 601(54.6%) were Spouses and only 82(7.4%) were Sons, Daughters/others.

Majority of the respondents were females (HH heads or spouses) informing that women were available while men were out for different reasons. Available residents in the randomized households, above 15 years old, were examined for any possible presence of TT or surgery done for TT.

Respondents were females 711 (64.6%) and males 389(35.4) with nearly 1.8:1 female to male ratio. Ages of respondents were: minimum 15 and maximum 83 with mean of 39.7 years old , SD 15.1 and median 38 years. All 1100 (100%) of the study subjects were rural dwellers and all were Amhara in ethnicity. Average family size was 4.8 with SD 1.9. Of the total respondents, 160(14.5%) were 15-24 youths, 532 (48.5%) 25-44 years old adults and 408(37.1%) were >44 years old elders.

Total population registered in the census being 15 years and above were 2915 and 2778 (95.3%) were examined for presence of TT and lid operation for TT.

Levels of education of respondents were: 869 (79%) illiterate and 231(21%) literate.

8.3 Economy

Study subjects' house construction materials and ownership of cattle studied in order to assess their economic status. Of the respondents 266(24.2%) had radio, 957 (87%) of the households' roofs were constructed from corrugated iron, 141(12.8%) had thatched roofs. From the sample HHs 968(88%) had cattle and in 798(72.5%) of the HHs people and animals were living in the same room.

Table 1: Socio-demographic characteristics of respondents in Yelmana densa Woreda West Gojjam Zone, June 2010.

	Frequency(n=1100)	Percent (%)
Types of respondents		
Household head	412	37.5
Spouse	601	54.6
Son/Daughter	82	7.5
Others	5	0.05
Age		
15-24	160	14.5
25-44	532	48.5
>44	408	37.1
Sex		
Male	389	35.4
Female	711	64.6
Education		
Illiterate	869	79
Literate	231	21.
House construction material		
Corrugated iron	957	87
Thatched roof	143	13

8.4. Environmental Factors

The result of this study showed that, 565 (51.4%) of the respondents‘ families use safe and 535 (48.6%) unsafe water sources. Distance of water source found to be: < 30 minutes round trip in 959 (87.2%) households, 30 minutes to 1 hour in 137(12.5%) households and the remaining 4 (0.36%) households it was more than an hour walking distance

With regard to latrine construction and utilization, 578(52.5%) own private household pit latrines among whom 116(10.5%) were built for the first time. Mean distance of the latrines from the residences, 14.8.metres (ranging from 2-60metres). In terms of utilization, there was evidence of latrine use (remaining of faeces seen at the mouths of latrine holes or beaten path from residence to toilets), in 456 (87.3%) of the households with latrine. 522 (47.5) of the households were without latrine.

. Households owning cattle were 968(88%) and the remaining 132(12%) had no cattle. Among households with cattle, in 798(82.4%) people shared the same room with cattle, 170 (17.6%) had separate rooms.

Table 2, Environmental factors: Availability/Presence of water, latrine and Cattle in respondents' families in Yelmana Densa woreda, West Gojjam Zone, June 2010.

Variable	Frequency(n=1100)	Percent (%)
Household own cattle		
Yes	968	88.0
No	132	12.0
People sharing the same space with cattle		
Yes	798	82.4
No	170	17.6
Presence of Latrine		
Yes	578	52.5
No	522	47.5
Presence of water (<30minutes round trip)		
Yes	959	87.3
No	141	12.7
Main source of drinking water		
Improved water source	565	51.4
Unimproved water source	535	48.6

8.5 Profile of Examined people in randomized households and prevalence of TT in Yelmana Densa Woreda, June 2010.

Total people in the census were 2915. Of all registered, 2769 were examined during data collection. From the totally examined, 933 (33.6%) were 15-24 years old; 1061 (38.2%), 25-44 years and 775(28.7%) were greater than 44 years old.

In relation to sex, 1318 (47.6%) were men and 1451 (52.4%) women.

Among cases, 2 were from 15-24 years old, 35 (1.2%) 25-44 years and 69(3.2%) >44 years old depicting that majority were elder people also increases, or as age increases prevalence of TT increases.

Regarding sex 77 of the cases (2.8%) were women and 29 (1.0%) were men, 2.8:1 women to men ratio.

Prevalence of TT in the study woreda calculated to be 3.8% (CI, 3% - 4%) with 4342 TT backlog.

Table 3: Profile of Examined people and prevalence of TT in Yelma Densa Woreda, June 2010

Variable	Frequency	Percent
Age		
15-24		
Yes	2	
No	931	33.6
25-44		
Yes	35	1.2
No	1026	37.0
>44		
Yes	706	25.5
No	69	3.2
Sex:		
Male		
Yes	29	1.0
No	1289	46.5
Female		
Yes	77	2.8
No	1374	49.6

8.6. Practice of respondents related to trachomatous Trichiasis in Yelmana densa Woreda.

Subjects were interviewed about any information heard concerning trachoma. Of respondents 357(32.5%) got some kind of information related to trachoma while 743 (67.5%) did not.

From the total TT cases 14 were recurrent cases (operated and have the problem again). The remaining 92 were non operated cases. Out of the total figure 74 were leveled in the questionnaire with number of lashes touching the eye ball. 57(62%) of them were minor TT cases (5 or less number of lashes touching the eye ball).

People with TT were asked why they were not operated. 15 (14.4%) did not know the presence of the problem, 18(17.4%) had no awareness about the presence of the service, 12(11.2%) service was far from their residence, 18(17.4) fear of surgery, 12(11.2%) no one to assist work at home, 8 (7.3%) no money for transport, 8(7.3%) problem is not serious and the remaining 15(14.4%) were not asked because they were recurrent cases.

No granuloma (tissue growth after surgery) found among study sample population with operated lids.

Table 4: Practice of respondents on trachomatous Trichiasis & findings related to TT cases Occurrence in Yelmana Densa woreda, June 2010.

Variable	Frequency(n=1100)	percent (%)
Have you ever heard information about trachoma?		
Yes	357	32.5
No	743	67.5
Number of Lashes touching the eye ball		
5 and less lashes	57	53
>5 lashes	49	47
Why have you not had TT surgery?	**15**	**14.3**
Do not know about the service	18	17.5
Problem is not serious	7	6.1
TT surgery service too far	12	11.2
No money for transport	8	7.1
fear of surgery	18	17.5
No one to assist work at home	12	11.2
Recurrent cases	14	14.3

8.7. Practice of operated respondents in Yelmana Densa Woreda West Gojjam Zone, June 2010

Cases offered Trachomatous Trichiasis surgery service were 66. In terms of sex: 45 (68.2%) were women and 21(31.8%) men, 2.1:1 women to men ratio.

Served people were further classified by age. Of all benefited 2 were youths (15-24years old), 29 (1.0%) adults (25-44) and 77 (2.8%) were elders indicating the problem is more pronounced with age increase.

Sites, where people got TT surgery service, were assessed in the questionnaire introduced. .Among total beneficiaries 49 (74.6%) served in health center, 12(17.4%) in hospitals, 5(8%) in the nearby health posts and private clinics.

From respondents' feedbacks this study learnt that information about Trachomatous Trichiasis surgery service was obtained from: spouses 16(23.8%); community leaders 15(22.2%); community health agents 13(19%); faith places 8(12.7%), health workers 11(16%) and school students 3(4.8%).

Related to benefits gained after TT surgery 33(49.2%) reported reduction of pain, 24(36.5%) witnessed vision improvement and 9(14.3%) were able to perform their daily activities.

Table 5: practice/attitude of operated respondents in Yelmana Densa Woreda of West Gojjam Zone, June 2010

Description	Frequency(=1100)	percent (%)
Operated TT cases		
Sex		
Female	45	68.3
Male	21	31.7
Age		
15-24	2	
25-44	29	1.0
>45	77	2.8
Where did you get TT surgery service?		
Near by Health Center	49	74.6
Hospital	12	17.4
Nearby Health Post	3	4.8
Private clinic	2	3.2
How Did You get TT surgery service?		
My spouse told me	16	23.8
Community health agents informed me	12	19
Informed from faith places	8	12.7
Health worker informed me	11	16
Community leaders told me	15	22.2
School students	3	4.8
3.6 What Benefits did you get from TT surgery? Reduced pain	33	49.2
Vision improved	24	36.5
Able to perform daily activity	9	14.3
TT case by age		

8.8. Association between Households with TT Cases (TT operated and none operated) and normal respondents Under Socio-demographic Characteristics in Yelmana densa Woreda,

A Total of 138 cases compared with none case respondents under the socio-demographic and economic characteristics. Families without radio showed significant association under the bivariate and multivariate logistic regression 2 times were in risk for the presence of TT than families with radio, OR (95%)= 0.493 (0.301, 0.810); 1.991 (1.198, 3.309). Type of house construction materials, as indicators for the better off families at rural settings, checked and it didn't show any significant association in the bivariate association, OR (95%) = 0.932 (0.543,1.601). No association seen among households with no education or with some kind of education and the presence of TT in a family, OR (95%) = 1.146 (0.558, 2.353); 1.050 (0. 410, 2.688).

Table 6: Socio-demographic characteristics of respondents Vs presence of TT cases in a family in Yeleman Densa woreda of West Gojjam Zone, June 2010

Variables	**Thraomatous Trichiasis cases**			
	Yes	**No**	**Crude OR(CI)**	**Adjusted OR(95%CI)**
Education				
Illiterate	**115**	**754**	1.400(0.729,2.689)	
Literate	**12**	**107**	1.030 (0. 435, 2.439)	
Primary +	11	101	1.00	
House construction material & Availability of cattle				
Corrugated Iron	121	836	1.00	
Thatched roof	17	126	1.146 (0.632,2.078)	
Radio Available in the household				
Yes	118	718	**1.00**	
No	20	246	**0.493 (0.301, 0.810)**	1.991 (1.198, 3.309)

8.9. Bivariate and Multivariate Logistic Regression Analysis of Environmental Factors Vs presence of TT cases in a family in yelmana densa Woreda

Environmental factors such as: source of water, availability and utilization of latrine, presence of cattle and people living in the same room with cattle were analyzed for presence of any association with trachomatous triaciasis presence.

In the bivariate and multivariate logistic regression analysis having cattle showed significant association, OR (95%CI)= 0.533 (0.333,0. 855); 1.654 (1.014, 2.698), 1.6 times exposing effect to occurrence of TT than households not having cattle.

Unsafe water source utilization also showed significant association, in the bivariate and multivariate logistic regression analysis; OR (95%CI) = 0.314 (0.211, 0.465); 3.256 (2.189, 4.842), having three times risk for presence of TT cases in a family.

Table 7: Environmental factors associated with Trachomatous Trichiasis cases presence in a family in Yeleman Densa woreda of West Gojjam Zone, June 2010

Variables	Trachomatous Trichiasis cases			
	Yes	No	Crude OR (CI)	Adjusted OR (95%CI)
Households own cattle				
Yes	112	856	1.00	
No	26	106	0.533 (0.333,0. 855)	1.654 (1.014,2.698)
People share the same space with cattle				
Yes	97	701	1.00	
No	15	155	0 .699 (0.395 1.238)	0.817(0.452, 1.477)
Latrine availability for the Household				
Yes	71	451	1.00	
No	67	511	1.201(0.840, 1.716)	0.741(0.493,1.114)
Water Source				
Improved	38	527	1.00)	
Unimproved	100	435	0. 314 (0.211, 0.465)	3.256(2.189, 4.842)
Health information about trachoma				
Yes	75	567	1.00	
No	63	395	.0.829(0.579, 1.187)	0.824(0.546,1.242)

8.10. Multivariate Analysis with the non confounded factor

In the bivariate analysis, under the three different categories, factors identified with significant association were under socio-demographic and environmental characteristics. In relation with attitude or practice it was not possible to extract factors because of negligible values. Under Socio- demographic character, radio identified with significant association OR (95%CI) = 1.991 (1.198, 3.309). Similarly, under environmental category households having cattle were significantly associated with presence of TT in the household, OR (95%CI) = 1.654 (1.014, 2.698). unsafe water sources under environmental factors also showed significant association with presence TT in a family OR (95%CI) =3.256 (2.189, 4.842)

Table 8: Multivariate Logistic regression and Factors having significant association with presence of TT cases in families in yelmana Densa Woreda June 2010.

Variables	Thraomatous Trichiasis cases			
	Yes	No	Crude OR (CI)	Adjusted OR (95%CI)
Radio Available in the household**				
Yes	118	718	**1.00**	
No	20	246	2.072 (1.235, 3.327)	1.991(1.1984,3.309)
Household own cattle***				
Yes	112	856	1.00	
No	26	106	1.875 (1.169, 3.005)	1.654(1.014, 2.698)
Water Source*				
Improved	38	527	1.00)	
Unimproved	100	435	3.188(2. 149, 4.730)	3.256(2.189, 4.842)

P-value: * < 0.000, **, <0.008, *; <0.044.**

9. Discussion

Respondents in majority were women as either household heads or spouses. It may be due to the beginning of the rainy season during data collection and males engaged in farming outside their houses in the farm. The very good incidence, majority of the respondents were women who were illiterate and they were majority of either the operated or none operated TT cases. The two coincidences' explained the reality why women are more affected by trachoma, on one hand they are illiterate on the other side, they are more engaged in rearing kids who are potent in transmitting active trachoma exposing mothers for repeated episodes which can lead to vision devastating blinding trachoma (TT). Stressing this point Emerson P, et al stated, although there may be an underlying biological reason that more women are affected by trachoma and trichiasis, the role of women as childcare providers is a likely cause. (29)

In this study the estimated prevalence of TT was calculated at 3.8% with 95%CI (3%-4%). In terms of case distribution in relation to age and sex: from the totally seen 106 TT cases 29(1.0%), were males and 77 (2.8%) females; with 2.8:1 women to men ratio. The result showed how much women are more affected by blinding trachoma than men. This result was supported by different studies conducted in different time in different countries. (5-8, 13, 15, 16, 27, 28) The reason for women to be more affected is due to the intimacy between mothers and children. Active trachoma is more prevalent in children 1-9 years old and of the close bondage between mothers and children, the repeated infection predisposes women for the occurrence of blinding trachoma more than men. It is because of this effect that researchers strongly advise TT surgery service to be gender sensitive. If trichiasis surgical services are not being utilized by women, in proportion to their need, then the goal of eliminating avoidable blindness due to trachoma will not be achieved. (13, 28)

TT prevalence in surveys conducted in the study woreda, in 2003 and in region wide with zone level representation in 2006/7 by the regional health bureau in

collaboration with the Carter center were; 6% and 10% respectively. The later result, with zone level representation for West Gojjam, is currently in use by all woredas of the zone for operational purpose. The Carter Center assisted malaria and Trachoma (MalTra) control project is striving to support the project to clear all estimated backlog (11938) as per its agreement.

Based on the result of this study the backlog in the study woreda is estimated at (half of Total population of the woreda multiplied by 3.8%) 4342 TT cases.

The triennial survey done in Ethiopia, 2008 result, showed sex and increase in age were having significant association with the occurrence of Trachomatous trichiasis. (15) Similarly, in this study the age group 45 + years had more prevalence than the younger age groups [15-24 years 2/2769, 25-44 35/2769 (1.0%) and >44 years 69/2769(2.8%)]

Some factors showed association from socio-demographic and environmental factors. Unsafe water use in a family was found to have the possibility of exposing the family for TT, OR (95%CI) =3.256 (2.189, 4.842). It has 3 times risk effect over having water from safe source. Availability of water in a community prevents the occurrence of trachoma. In systematic review done on the Epidemiology and control of trachoma, reviewers stated that, trachoma is currently more common in dry areas. It is plausible that better access to water would improve hygiene levels and reduce the transmission of infection. The review further elaborated; several studies have indeed found an association between increased distance to water and the prevalence of active disease. (30)

The baseline survey conducted in 2006/7 in Amhara region estimated the level of some socio demographic and environmental factors such as: safe water supply 34.3%, round trip distance <30 minutes to collect water 74.1%, and household pit latrines, 24%. (6) In our study the results showed improvement in all factors. Some of these; safe water supply 51.4%, access to water (in less than 30 minutes round trip) 87.3% and availability of house hold pit latrines has grown to 52.5%.(6) The improvement made in the environment factors and the reduction seen on the prevalence of TT indicates that, like what has happened in any developed nations in

the world (2), if the improvement progress continues in it pace or in a better pace, elimination of blinding trachoma is possible in the study woreda as well.

Presence of cattle showed association under the multivariate logistic regression analysis with occurrence of TT, OR (95%CI) = 1.654 (1.014, 2.698). .It warns that presence of cattle is 1.6 times risk for the presence of TT in a family. The fly most commonly found in contact with eyes is *Musca sorbens*, which preferentially breeds in human faeces. As stated by Burtton J.M, Lack of latrines has often been associated with increased risk of trachoma, probably due to a larger fly population. No animal reservoir for *C. trachomatis* has been found in trachoma endemic environments, although there is an association with cattle, which may result in an abundance of flies. (31)

Absence of a radio in households showed significant association with the presence of TT in family; OR (95%CI) = 1.991 (1.198, 3.309). The Carter Center assisted MalTra project 2007 report stated that within the year 1447 (43.9%) from the total 3299 kebeles of the region had ongoing health education reaching an approximately 8.7million population. (32) (This report included the study woreda which was part of the program beneficiaries). The report further elaborated, The Amhara regional radio has the potential to reach all 20 million people of the region but radio ownership is estimated to be quite low (only 25% of the households). (32)

Radio, with significant association in reducing the possibility of presence of TT in a family, reported in shortage which deserves promotion work on the benefit of having radio in a family. On the other side, the report heralds a lot on the existence of favorable condition for the dissemination of information such as availability of ongoing health education in 1447(43.7%) of kebeles in the region and 11,125 trained in trachoma control mobilization. This by itself is a good opportunity, as far as properly utilized for the benefit of the specific service(TT surgery utilization), to minimize barriers such as patients' fear, lack of information about where service is provided.

A study done in Northern Ethiopia Enebsie sarmider woreda in 2006 stated that majority of none operated (109/135) TT patients' reason for refusing surgery service was distance. Based on study subjects suggestion the researcher noted, "109 respondents said they would have surgery if it was easily accessible in their vicinity". (9) Other factors like: fear of surgery, doubts around outcome, lack of accompany during surgery etc were also mentioned as barriers.

In our study fear of surgery, lack of information about the presence of the problem and lack of awareness on existence of the service, mentioned by the study subjects. All these factors tell us the gaps seen in information dissemination. In the Ethiopian setup the health extension service, which recently flourished, could have been a very good opportunity to achieve better information dissemination for TT surgery. The Health Extension Workers (HEW) deployed in each kebele for the implementation of the package can be used for the mobilization and identification of TT cases.

Similarly, a study done in Tanzania in 2007 mentioned, uptake of trichiasis surgery was substantially improved by village-based promotion. (8) Another study result by "Bowman", informed and strongly suggested that better surgical uptake when surgery is provided in patients' villages due to lower cost to the patient, time saved and less fear of the operation. (10)

To benefit from recommendations of studies like in afore mentioned our study Woreda has deployed free service providers in three sites outside the capital. (Woreda HO 2009 report) Integrated Eye care Workers (IECWs) with basic nurse trainings, additionally took three to four weeks training on TT surgery outside the capital in secondary eye units. Back from the training they were expected to give service in routine or campaign programs integrating with other health services.
What we cannot confidently tell at this time is, how many of the trained are available in their assignment, how much service providers are equipped with surgery instruments and consumables, how often/how regularly they open their clinics for the needy, how qualitative service they were providing, what mechanism they used to

mobilize the community to address the victims to benefit from the service. All these were important components to be addressed in a similar study in order to give full picture about the service provision.

In relation with mobilization, the study done in Tanzania suggested that village leaders and school teachers may be appropriate choices for promoting surgical intervention in rural settings endemic for trachoma, as both groups have a level of credibility. (8)

Beneficiaries who got TT surgery service before this study informed, during interview, that their second important source of information for having the surgery service were community leaders, 23/66(36.5%). Schools, in this study, were mentioned last as source of information for TT surgery service 3(4.9%). This might be, due to low level of awareness to the benefit from integrating preventive health service with formal education. Schools are very important component of the community where by TT surgery service providers or program managers would have concentrated.

For the benefit of this study schools were taken into consideration and the report from the regional education bureau of 2007/8 analyzed by this research principal investigator. The result showed that in West Gojjam zone, on average in every house hold or in every five people, there was one elementary school student. (33) It implies that addressing schools to mobilize beneficiaries for TT surgery can make a difference in getting good number of TT cases flow to the service area.

Less severity of the problem could influence health service seeking behavior of patients. In this study among total TT cases, numbers of eye lashes touching the eye ball, 57(62%) were with minor TT (5 or less number of eye lashes toughing the eye ball). On the other side, among non operated respondents 6 (6.2%) mentioned the reason for not getting operated was their problem was not serious. These last respondents knew they had the disease but they did not give attention until it was

severe. Other studies cited it as a barrier where by Individuals with minor trichiasis often decline surgery. (14)

The time when the minor TT swifts to major TT is not well demarcated and those who are at minor TT stage cannot be advised to delay surgery. A study done in the Gambia found faster rates of progression from minor to measure TT. During a 1-year period 46% of unilateral (one eye) cases became bilateral (two eyes) cases and 33% of minor trichiasis progressed to major trichiasis. (12) The most important effort that needs to be invested in trichiasis surgery service is to serve cases as early as possible and prevent corneal opacity/blindness from trachoma. In line with this a study in the Gambia recommended, the most important thing is to prevent/ to avoid vision loss by providing early surgery service. In areas where people do not have frequent contact with eye care services, surgery for mild disease is a logical approach (26)

In our study there was no any socio-demographic or economic differences seen between operated versus none operated. In majority, for the operated cases, information came from their spouses, community leaders and community volunteer health workers. The same people can be addressed to bring beneficiaries with TT to service area.

Among the totally operated 66 cases 14 (22%) had re-occurrence (recurrence) of TT. It is higher than the recurrence study done in the study woreda in 2006 (16.6%). (34) Although not mentioned as barrier during interviews of this study by none operated patients, it seems higher and can be one reason for low surgery uptake. In fact this is far lower than the recurrence rate reported from other sources. As noted by Zhang H. TT recurrence has been reported with all surgical techniques and has been observed from as early as 1 year to as late as 11 years following the initial surgery. The highest recurrence rate reported was 75%. (35) What matters here is the duration of observation.

To increase TT surgery service output in Tanzania, they found outreach the most productive program. As mentioned in their paper, conducting a campaign was associated with availability of complete surgery materials, consumables and identifying a supervisor.(8) Similarly the Ethiopian Amhara region Trachoma control program used outreach/campaign program as an important component of the control program. For example the 2007 annual performance report of The Carter center described, from the totally operated 28,425 TT cases within the same year, majority were served in 107 campaigns organized for this purpose. (A campaign is defined, in the Amhara region context, as a team of TT surgeons travel to health facility where routine surgery service not provided and operate all presenting cases). A campaign lasts from 5-10 days and helps to overcome barriers of distance for those who were suffering from TT. (32)

10. Strengths and Limitations

10.1 Strengths

Training was based on developed manual and field test for data collectors in eye examination was managed by organizing TT surgery campaign. If the campaign was not organized it was very difficult to get as many as 30 cases for the reliability study. This has helped the study in controlling the interpersonal bias. Data was double entered to maintain quality of the study.

10.2 Limitations

Like any similar or more complex studies, this study faced some limitations. The main to be mentioned were:

- Since cases of such diseases are scattered, large sample size could have given more information and stronger results.
- The study design was a cross sectional quantitative study and it could not determine the specific conditions which prevail on service providers side and situations challenging beneficiaries in depth. This study could have told us better if it had included qualitative study design.
- It concentrated on TT prevalence determination and investigating factors that have association in TT surgery service utilization. It would have been good if it included the prevalence of active trachoma determination since both are inseparable consequences of the disease.
- Availability and equitability of service and service providers, availability of surgery instruments and consumables, quality of service, vision of operated and non operated TT cases were not assessed and all these could also have told us a lot if they were included in this study.
- Finance were the main restricting factors to deal all together.

11. Conclusion

The study was proposed to determine the prevalence of Trachomatous Trichiasis (TT) and to identify Factors affecting TT surgery service utilization in Yelmana Densa Woreda.

- Prevalence of Trachomatous trichiasis was found to be 3.8% with CI (3%- 4%) and total backlog of TT in the woreda estimated at 4342 operable TT cases.
- Operated and none operated TT cases were found with fair distribution across the sampled kebeles, ranging from 5 in Yegebeta to 20 in Gebesh with mean 12.5, depicting that the problem is almost uniformly affecting the study woreda.
- This result showed marked difference from the study done in the same woreda in 2003 (6%) and another study done in 2006/7 with zone level representation. (10%)
- Radio absence showed significant association with the presence of TT in a family. .
- Unimproved water supply showed significant association with the presence of TT in a family
- Presence of cattle in a family found to be risk for TT occurrence in a family. As suggested from other studies it is due to the increased population of flies that TT presence associated with presence of cattle in a family.
- In the descriptive analysis service utilization found to be influenced by factors such as distance of service site, not knowing presence of problem, not knowing service presence, fear of surgery and cost for transport, lack of accompany during surgery and lack of assistance at home during surgery.

12. Recommendations

The association significantly seen between socio-demographic and environmental risk factors Vs presence of TT in families should get consideration.

- Health workers other development agents shall advise capable families to have the access to radio in order to decrease presence of TT in a family
- Development agents HEWs and other partners working for the improvement of life of people in the rural area of the study woreda should advice or teach families with cattle to keep their cattle's night place clean and separate from people.
- Woreda political leaders, Woreda health office, other partners working in the development of improved water supply should strengthen their effort to reach all study woreda people with appropriate water supply.
- Further study is necessary to assure: current active trachoma prevalence, availability and equitability of service providers, availability of surgery instruments and consumables including qualitative study design.

13. References

1. Pashtoon M, Kasi, Ahmed I, Gilani, Ahmad K, Naveed Z, Et al. Blinding Trachoma: A Disease of poverty. Issue of PLoS Medicine. November 30, 2004.
2. J Kumaresan.D. Can blinding trachoma be eliminated by 20/20? Eye, 2005 19: 1067-1073.
3. WHO. Blinding Trachoma: Progress towards global elimination by 2020. Media centre, Notes for the media 2006
4. World Health Organization. Future Approaches to Trachoma Control. Geneva, 1996 WHO, 1997, WHO document WHO/PBL/96.56.
5. FMOH of Ethiopia. Blindness, Low vision and Trachoma survey. Addis Ababa, 2006.
6. Emerson P. Integrated Malaria and Trachoma Survey, 2006/7 (not published).
7. The Carter Center. Trachoma control program plan of action for four zones (S.Gondar, N.Gondar, W. Gojjam & E.Gojjam). Amhara region, January 2004. (not published).
8. Mahande M**,** Tharaney M, Kirumbi E, Ngirawamungu E, Geneau R, Tapert L. Et al. Uptake of trichiasis surgical services in Tanzania through two village-based approaches. Br J Ophthalmol, 2007, **91:** 139
9. Habte D; Gebre T; Zerihun M; Assefa Y. Determinants of Uptake of Surgical Treatment for Trachomatous Trichiasis in North Ethiopia. Ophthalmic Epidemiology, September 2008.
10. R. J.C. Bowman O, Sey Soma N, Alexander P, Milligan J, Rowley H, Faal Foster A, R. L. Et al. Should trichiasis surgery be offered in the village? A community randomized trial of village vs health centre-based surgery. Trop Med Int. Health. .August 2000, 5(8):528-533.
11. Mathew A. A, Turner A, Taylor HR. Strategies to control trachoma**.** Drugs. May 29, 2009; 69 (8):953-70.
12. Matthew, Oliva S, Munoz B, Lynch M, Mkochaand H. Sheila KW. Evaluation of barriers to surgical compliance in the treatment of trichiasis. January, 1997, 21 (4)
13. S West M, Phuong Nguyen H, Mkocha G, Holdsworth E, Ngirwamungu P, Kilima B, et al. Gender equity and trichiasis surgery in the Vietnam and Tanzania national trachoma control programmes. BrJ Ophthalmol. Nov 2004, 88 (11).

14. Durkin S, Robert J, Casson, FRANZCO, Henry S, Newland H, et al. Prevalence of Trachoma-Related Trichiasis and Corneal Opacity in Rural Myanmar. Ophthalmology, May, 2007, 114(5).
15. Ngondia J, Gebre T, Biru S. E, Adamu L, Emersona P, Zerihun M, et al. Evaluation of three years of the SAFE strategy (Surgery, Antibiotics, Facial cleanliness and Environmental improvement) for trachoma control in five districts of Ethiopia hyper endemic for trachoma. Transactions of the Royal Society of Tropical Medicine and Hygiene, (2009).
16. Cromwell A.E, Courtright P, King D. J, Rotondo A. L, Ngondi J, Emerson M. P. The excess burden of trachomatous trichiasis in women: a systematic review and meta-analysis. Trans R Soc Trop Med Hygiene, 2009, doi: 10.1016.
17. Negral A.D, Tayler R H, and West S. Guidelines for Rapid Assessment for Blinding Trachoma. WHO, 2001.
18. . Burton J.M, Richard J. C, Bowman, Hannah Faal, Esther A. N, Aryee Usman N, et al. The Long-Term Natural History of Trachomatous Trichiasis in The Gambia. IOVS, March 2006. 47(3).
19. The American Heritage® Medical Dictionary. Dictionary, Encyclopedia and Thesaurus - The Free Dictionary. Houghton Mifflin Company, 2007
20. West E.S, Alemayehu W, Beatriz M, Melese M, Imeru A, Surgery for Trichiasis, Antibiotics to Prevent recurrence (STAR) Clinical Trial Methodology. Ophthalmic Epidemiology, 2005, 12: 279-286.
21. West E S, Munoz B, Imeru A .Alemayehu W, Melese M, West K S. The association between epilation and corneal opacity among eyes with trachomatous trichiasis. Br J Ophthalmol. 2006, 90: 171–174.
22. Solomon W. A, Zondervan M, Kuper H, Buchan J C, Mabey D.C, Foster A. Trachoma control: a guide for programme managers. Geneva: World Health Organization. 2006.
23. Thylefors B, Dawson C.R, Jones B.R, West S. K, Taylor H. R. A simple system for the assessment of trachoma and its complications. Bulletin World Health Organization. 1987, 65: 477–483.

24. Paolo Mariotti S, Pascolini D, Rose-Nussbaumer J. Trachoma: global magnitude of a preventable cause of blindness. Br J. Ophthalmol. published online, 19 Dec, 2008.
25. Emerson M.P, Burtten M, Solomon W.S, Bailey R, mabey D, The SAFE Strategy for Trachoma Control: Using Operational Research for Policy, Planning and Implementation. Bulleting of The World Health Organization. 2006, 84: 613-619.
26. Burton M, Solomon A. What's new in trichiasis surgery? International Centre for Eye Health. London, 2004.
27. Courtright P. K, West S. Contribution of Sex-linked Biology and Gender Roles to Disparities with Trachoma. Tumaini University, Moshi, Tanzania, and Johns Hopkins University, Baltimore, Maryland, USA. November, 2004, 10.
28. Emerson P, Rotondo L, Courtright P. Women and Trachoma, Achieving Gender Equity in the Implementation of SAFE. The carter center, One Copen hill. www.cartercenter.org.
29. Emerson M P, Rotondo L. Trachoma and women: latrines in Ethiopia and surgery in Southern Sudan. Community Eye Health J. 2009, 22(70): 24-25.
30. Victor H. Hu, Emma M, Harding-Esch J, Burton L. M, Bailey R, Kadimpeul J, Mabey W. C D. Epidemiology and control of trachoma: systematic review. Tropical Medicine & International Health. June 2010, 15(6): 673–691,
31. Burton J M. Trachoma: an overview. Br Med Bull. 2007, 84 (1): 99-116.
32. The Carter Center. Summary Proceeding: Ninth Annual Trachoma Control Program Review: Ensuring Implementation of the Full SAFE Strategy. Atlanta.February, 11-13, 2008.
33. Amhara National Regional State Education Bureau. Trends of primary education program. 1985–2001 e.c. (1992/93–20007/08), HH//www .anrs.edu.org.
34. Asefa Y; Habte D; Yigzaw T; Mekonen A; Gebre T; Dubale T; Zerihun M. Trachomatous Trichiasis Recurrence in Northern Ethiopia: A one Year Prospective Study of Trachomatous Trichiasis Surgery done by Integrated Eye Care Workers. Ethiop. J. of Health. Dec. 2008, 22(1): 8-13
35. Zhang H, Kandel P.K, Sharama B, Dean D. Risk Factors for recurrence of Postoperative Trichiasis. Arch. Ophthalmol. 2004, 112: 511-516.

14. Annexes

Annex I. Form A: House Hold Questionnaire (English)

Amhara Nationa Regional State West Gojjam Administrative zone, Yelmana densa woreda Trachoma Traichiasis prevalence and Factors affecting TT surgery survey House Hold Questionnaire

Serial Number		Data Entry 1 *(initial)*	Entry Date
Woreda:		Data Entry 2 *(initial)*	Entry Date
Kebele: Development team:		Interviewer/examiner name: Date of this interview DD/MM/YYYY |__|__|/|__|__|/|__|__|__|__|	
Household number:		Consent given? No=0 Yes=1 Supervisor's name:	
Demographics			
GI1	Description of Respondent	Head of Household = 1 Wife/Husband=2 Son/Daughter=3 Mother/Father of husband/Wife=4 Other (*specify*)_____ =99	
GI 2	Gender of Respondent	Male = 0 Female = 1	
GI 3	How old are you?	*(write age in years)*----------	
GI 4	Family size	-Indicate in number----------	
GI 5	What is the highest level of school you have attended? *(If "none," ask "have you had any non-formal education (NFE)?")*	None=0 Religious=1 Non-formal Education)=2 Elementary school (grade 1-6)=3 Junior secondary=4 Senior secondary=5 College/University=6	
GI 6	What is your ethnicity?	Amhara=1 Other (*specify*)_____=99	
Household Social Economic Status			
ES1 ES2 ES3	Does your household have any of the following? Radio Television Electricity	No=0; Yes=1= No=0; Yes=1 No=0 ; Yes=1	
ES4	**Observation:** what is the main construction material for the roof in this household?	Corrugated Iron=1 Thatch =2 Stick and mud=3 Other (*specify*)_____=99	
Heath Education			
HE1	Do you know what trachoma is?	No=0; Yes=1	If the No go to HE3
HE 2	Have you ever seen someone with this eye condition?	No=0 Yes=1	

HE3	Have you ever heard health information on trachoma?	No=0 Yes=1	If No skip to W1
HE4	Where did you hear the trachoma information? *(List all that apply)*	Mass media (TV, radio, etc)=1 Health facility=2 Community gatherings=3 School=4 Other (*specify*)_____=99	
HE5	What information about trachoma did you hear? *(List all that apply)*	Causes of trachoma=1 Transmission=2 Prevention=3 Antibiotics treatment=4 Trichiasis surgery=5 Other (*specify*)_____=99	
HE6	What is the benefit of this trachoma information to you and your family? *(List all that apply)*	do not know=0 We can be protected through prevention=1 hygiene and sanitation can prevent the disease=2 Early treatment can prevent blindness=3 Lid surgery can prevent blindness=4 Others (specify)_____99	
Water source and access			
W1	What is the main source of drinking water for members of your household?	Unprotected Spring=1 Protected Spring=2 Unprotected Dug Well=3 Hand pump=4 Surface Water (River/Dam/Lake/Pond)=5 Public Tap/Standpipe=6 Piped into Yard=7 Piped into Dwelling=8 Other (*specify*)_____=99	
W2	How long does a round trip to collect water usually take?	<30 minutes=1 30 to 1 hour=2 > 1 hour=3	
W3	Is there queue to get water?	Doesn't take time=0 <30 minutes=1 30 to 1 hour=2 > 1 hour=3	
Face washing			
FW1	Is there 1-9 year old child?	No=0 Yes=1	If no go to LO 1
FW2	How often are faces of children washed in this household?	Never=0 Every other day=1 Once a day=2 Twice a day=3 Three or more times a day=4	If never washed skip to LO 1
FW3	What is the first time of the day the faces first washed?	Morning=1 Lunch time=2 Bed time=3 Other (*Specify*)_____=99	
FW4	What are the benefits of washing faces of children? *(List all that apply, ask anything else after each response)*	No benefit=0 Helps to have lovely child=1 Helps to keep child face clean=2 Prevents trachoma=3 Keeps flies away from children's face=4 Others (Specify)_____ =99	

SN_____ Kebele_____ Development team/Gott_____

Pit Latrine & Latrine observations			
LO1	Does the family use latrine?	No=0 Yes=1	If no go to CT 1
LO2	Is the latrine communal or house hold latrine?	Communal=0 Household=1	If communal go to LO 8
LO3	How long ago was the latrine built?	Give answer in months ----------	
LO4	Is this the first latrine?	No=0 Yes=1-	
LO 5	What are the benefits of having a latrine in the household? *(List all that apply, ask anything else after each response)*	Prevented bad smell in compound and in the village=1 prevented diarrhea and other intestinal parasites=2 Family developed any time latrine utilization culture=3 Others (Specify)_____=99	
LO 6	Distance from house (use your stride to estimate)	*Write answer in **METERS***_____	
LO 7	Evidence of latrine usage (*faeces in pit or beaten path)?*	No=0; Yes=1	
LO 8	Latrine wall present?	No=0; Yes=1	
LO 9	Latrine roof present?	No=0; Yes=1	
LO 10	Latrine hole covered?	No=0; Yes=1	
LO 11	Hand washing container present?	No=0; Yes=1	−>If no skip to LO 7
LO 12	Water in hand washing container?	No=0; Yes=1	
LO 13	Presence of open faeces in the compound?	No=0; Yes=1	
LO 14	Type of latrine floor?	Earth floor=1 Cement slab=2 Wooden slab=3 Other (*specify*)_____ 99	
Cattle			
CT1	Does this household own cattle?	No=0; Yes=1	If no go to TT 1
CT2	Where is the cattle kept at night? (*Verify by observation*)	Inside house together with people=1 Separate structure for cattle only=2	
TT 1	Is there TT case in this family?	No=0; Yes=1	If no go to TT3
TT2	How many family members with TT ?	One person=1; Two persons=2; Three persons=3	
TT3	Is there TT operated case in this family?	No=0; Yes=1	If no go to NLS 1
TT4	How many persons operated for TT ?	One person=1; Two persons=2; Three persons=3	

					Right Eye		Left Eye					
					No=0; Yes=1		No=0; Yes=1		Trichiasis surgery:		Visual Acuity	
ID. #		Name	***Sex*** (M/F)	***Age*** (years)	TT	CO	TT	CO	RE No=0; Yes=1	LE No=0; Yes=1	Right Eye	Left Eye
0	*1*											
0	*2*											

People who have not had Trichiasis surgery			
NLS 1	How long since you have TT?	<a year=1 1-5 years=2 5-10 years=3 >10 years=4	
NLS 2	What is trachomatous trichiasis?	I do not know=0 Eye lash scratching eye ball =1 Eye lash grown in the ball =2 Hereditary problem=3 Curse from God =4 Others (Specify)_____ =99	If no skip to NLS 4
NLS 3	Do you know what can cure Trachomatous trichiasis?	I do not know=0 Holy water=1 Herbal treatment=2 Eye ointment or other drug=3 Surgery=4 Prayer=5 Witchcraft=6 Others (Specify)_____=99	
NLS 4	Where is the service provided?	I do not know=0 In the Health post=1 Health center=2 Hospital=4 Others, specify----------=99	If no go to NL S 6
NLS 5	Who provides the service?	I do not know=0 Local health workers=1 Eye specialists =2 Foreigners=3 Cultural practitioners =4 Other (specify)----------=99	
NLS 6	Why have you not had TT surgery? (*After each response ask* 'anything else?' and *Indicate all responses given)*	Don't know presence of problem=0 Don't know about the service=1 Problem is not serious=2 TT surgery service too far=3 No money for transport=4 Fear of surgery =5 No one to assist work at home =6 No money for surgery cost =7 No one to assist during surgery=8 Other (specify)---------- =99	
NLS 7	What difficulties do you experience due to TT? (*After each response ask* 'anything else?' and *Indicate all responses given)*	None=0 Pain=1 Reduced vision=2 Not able to farm=3 Not able to cook=4 Not able to fetch water=5 Not able to attend social events=6 Not able to go to market=7 Other (*specify*)---------- =99	
NLS 8	Number of lashes touching the globe (write your finding in the space) (0 lashes =0, 1-5 lashes=1, 5-10 lashes=2, 10+ lashes =3	----------Right Eye ----------Left Eye	

SN_____ Kebele_____ Development team/Gott_____

					Right Eye		Left Eye		Trichiasis surgery:		Visual Acuity	
					No=0; Yes=1		No=0; Yes=1					
ID. #		Name	***Sex*** (M/F)	***Age*** (years)	TT	CO	TT	CO	RE No=0; Yes=1	LE No=0; Yes=1	Right Eye	Left Eye
0	*1*											
0	*2*											

For all participants who have had trichiasis surgery			
LS1	How long ago was surgery done (*time in **months***)	----------Describe in months	
LS2	Where did you get TT surgery service?	Hospital=1 Near by HC=2 Near by HP=3 Others (Specify)----------99	
LS3	How did you get TT surgery service?	People served gave me information=1 School student from my family informed=2 My spouse told me=3 Health worker informed me=4 Informed from mass media=5 Community health agents informed me=6 Community leaders told me=7 Informed from faith places=8 Others (Specify)----------99	
LS4	What benefits did you get from TT surgery?	None=0 Reduced pain=1 Vision improved=2 Able to perform daily duty=3 Others (Specify)----------99	
LS 5a	Is there recurrence TT (TT after surgery)?	No=0; Yes=1	
LS 5b	If yes, which lid has the recurrence	Right upper lid=1 Left Upper lid=2 Both upper lids=3	
LS 6	Is there granuloma?	No=0; Yes=1	
LS 7	Evidence of Lid deformity	No=0; Yes=1 Others (Specify)----------99	

SN_____ Kebele_____ Development team/Gott_____

FORM B: HOUSEHOLD CENSUS AND TRACHOMA GRADING (Register all family members 15 years and above in the space below).

HH #:		Examiners initials:		Initials of data entry clerks			
Village:		Sheet number:		1:		2:	

					Right Eye No=0; Yes=1		Left Eye No=0; Yes=1		Trichiasis surgery:		Visual Acuity	
ID. #		Name	***Sex*** (M/F)	***Age*** (years)	TT	CO	TT	CO	RE No=0; Yes=1	LE No=0; Yes=1	Right Eye	Left Eye
0	*1*											
0	*2*											
0	*3*											
0	*4*											
0	*5*											
0	*6*											
0	*7*											
0	*8*											
0	*9*											
1	*0*											
1	*1*											
1	*2*											
1	*3*											
1	*4*											
1	*5*											

ተ.ቁ---------- ቀበሌ---------- ልማት ቡድን/ ጎጥ----------

Annex II. Form A: House Hold Questionnaire (Amharic)

አማራ ብሄራዊ ክልላዊ መንግሥት በምዕራብ ጎጃም ዞን ይልማና ዴንሳ ወረዳ ውስጥ የትራኮማ በሽታ የሚያስከትለውን የዐይን ሽፋሽፍት መንሻፈፍ ስርጭት ለመወሰንና የዐይን ቆብ ቀዶ ህክምና ተጠቃሚችን ቁጥር ማነስ ምክንያት ለማጥናት በዕጣ በተመረጡ ቤተሰቦች የመረጃ ስብሰባ ለማካሄድ የተዘጋጀ ቃለ መጠይቅ

አመ 2	የመረጃ ሰጪው ፆታ	ወንድ = 0 ሴት = 1	
አመ 3	ዕድሜ	*በሙሉ ዓመት ይገለጽ*----------	
አመ 4	የቤተሰብ ብዛት	*በቁጥር ይገለጽ*----------	
አመ 5	የትምህርት ደረጃ *(መልሱ ምንም ከሆነ ሌላ መደበኛ ባልሆነ የተማሩት ተብሎ ይጠየቅ)*	ያልተማረ=0 ኃ ይማኖታዊ=1 መደበኛ ያልሆነ=2 የመጀመረያ ደረጃ (1-6) =3 መለስተኛ 2ኛ ደረጃ=4 ከፍተኛ 2ኛ ደረጃ=5 ኮሌጅ/ዩኒቨርሲቲ=6	
አመ 5	ብሄር/ብሄረሰብ	አማራ =1 ሌላ (ይጠቀስ)----------=99	
		ኢኮኖሚያዊና ማሕበራዊ መረጃ	
ኢ.ማ1 ኢ.ማ2 ኢ.ማ3	ከሚከተሉት በቤት ውስጥ ያለትን ይግለጹ ሬድዮ ቴሌቪዥን የኤሌክትሪክ መብራት አገልግሎት	የለም=0; አለ =1 የለም =0; አለ =1 የለም=0 ; አለ =1	
ኢ.ማ4	**የቃለመጠይቅ አቅራቢ ምልከታ፡ የቤቱ ጣራ ከምን የተሠራ ነው?**	ከቆርቆሮ =1 ከሳር =2 ከጭቃ ጡብ =3 ሌላ (ይጠቀስ)_____=99	
		የጤና ትምህርት	
ጤት1	ትራኮማ ምን እንደሆነ ያውቃሉ?	አላውቅም =0; አዎ =1	መልሱ አላውቅም ከሆነ ወደ ጤት ይለፉ
ጤት2	በትራኮማ በሽታ ዐይኑ የተጠቃ ሰው አይተው ያውቃሉ?	*የለም =0;* አዎ =1	
ጤት3	ስለትራኮማ የጤና ትምህርት ሲሰጥ ሰምተው ያውቃሉ?	*የለም =0;* አዎ =1	መልሱ የለም ከሆነ ወደ ው 1 ይለፉ
ጤት4	የጤና ትምህርቱን ከየት ሰሙት (የሚነግሩትን ቦ ች በሙሉ ምልክት ያድርጉ	ከመገናኛ ብዙሃ (ከሬድዮ ከቴሌቪዥን ወዘተ)=1 ከጤና ተቋማት =2 ከሕዝባዊ ስብሰባች=3 ከትምህርት ቤት =4 ሌላ (ይጠቀስ)----------99	
ጤት 5	*ስለትራኮማ በሽታ ከተማሩት የጤና ትምህርት ምን ያስታውሳሉ? (ከሚጠቀሱት መካከል በአማራጭ ከተቀመጡት ጋር ተዛመጅነት ያላቸውን ይዘርዝሩ)*	ስለትራኮማ መነሻ ምክንያት =1 ስለመተላለፊያ መንገዱ =2 ስለመከላከያ ዘዴቹ =3 ጸረ ተሕዋስ ህክምና የሚያስፈልግ ስለመሆኑ=4 ስለ ዐይን ቆብ ቀዶ ህክም =5 ሌላ ይጠቀስ _____=99	

ተ.ቁ---------- ቀበሌ---------- ልማት ቡድን/ ጎጥ----------

ጤት 6	*የትራኮማ ትምህርቱ ለርስዎና ለቤተሰብ ምን ጥቅም ሰጠ/ይሰጣል? (ክ ያንዳንዱ ምላሽ በኋላ ሌላስ? ብለው በመጠየቅ መልሶችን ይዘርዝሩ)*	አላቅም =0 በመጠንቀቅ በሽታው እንዳይዘን መከላከል ይቻላል=1 የግልና የአካባቢ ንጽሕና በሽታውን ይከላከላል =2 በወቅቱ መታከም ዐይነ ስውርነትን ይከላከላል=3 የዐይን ቆብ ቀዶ ህክምና አይነስውርነት ይከላከላል=4 **ሌላ (ይጠቀስ)----------=99**	
ውሃ የሚገኝበት ምንጭና ቀረቤታው			
ው 1	*ለቤተሰቡ የሚያገለግል ውኃ ከየት ያገኛሉ?*	*ካልተጠበቀ ምንጭ* =1 *ከተጠበቀ ምንጭ* =2 *ካልተጠበቀ የውሃ ጉድጓድ* =3 በዕጅ ተቆፍሮ ከተዘጋጀ ፓምፕ =4 ከገጸ ምድር ውኃ (ወንዝ፤ይቅ፤ ግድብ፤ ኩሬ) =5 የሕዝብ ቧንቧ ው (ቦኖ) =6 በየቤቱ ከተሰራጨ የቧንቧ ው =7 ወደ መኖሪያ አካባቢ ከተዘረጋ ቧንቧ ውኃ =8 ሌላ ይጠቀስ _____=99	
ው2	*ውኃ ለማግኘት ደርሶ መልስ መንገዱ ምን* *ያህል ጊዜ ይፈጃል?*	ከ *30 ደቂቃ በ ች* =1 ከ30 ደቂቃ *አስከ 1 ሰዓት ሰዓት*=2 ከ*1 ሰዓት* በላይ=3	
ፊት ትጥብ			
ፊት1	የሕጻናት ፊት በቀን ስንት ጊዜ ይ ጠባል?	ምንም ታጥቦ አያቅም =0 በየሦተኛው ቀን =1 በቀን አንድ ጊዜ =2 በቀን ሁለት ጊዜ =3 በቀን ሦስትና ከሦስት ጊዜ በላይ =4	መልሱ 0 ከሆነ ወደ ቀሰያ ይሂዱ
ፊት2	የሕጻናትን ፊት በቀን ውስጥ ለመጀመሪያ ጊዜ የሚያጥቡት ምን ስዓት ነው?	ጥዋት =1 ምሳ ስዓት =2 መኝታ ስዓት =3 ሌላ ይጠቀስ----------99	
ፊት3	የሕጻናትን ፊት ማጠብ ጥቅሙ ምንድን ነው? ተቀራራቢ የሆነውን መልስ ይዘርዝሩ:: (ከመልሱ በመቀጠል ሌላስ? አያሉ ይጠይቁ)	ምንም ጥቅም የለውም=0 ደስ የሚል ሕጻን አንዲኖር ይረዳል=1 ከሕጻኑ ፊት ቆሻሻን ያስወግዳል=2 ትራኮማን ይከላከላል=3 የሕጻኑን ፊት ዝንብ አንዳያርፍበት ይረዳል=4 ሌላ (ይጠቀስ)----------99	

ተ.ቁ---------- ቀበሌ---------- ልማት ቡድን/ ጎጥ----------

መጸዳጃ ቤት ምልከ			
መም 1	መኖሪያ ቤቱ መጸዳጃ ቤት አለው?	የለም =0, አለ =1	መልሱ የለም ከሆነ ወጥያቄ CT1 ይሂዱ
መም 2	መጸዳጃ ቤቱ ከተገነባ ስንት ጊዜ ሆነው?	----------በወራት ይጠቀስ	
መም 3	ይህ መጸዳጃ ቤት የመጀመሪያችሁ ነው?	አይደለም ,=0 አ =1	
መም 4	መጸዳጃ ቤት መኖሩ ለቤተሰቡ ምን ጥቅሞችን አስገኘ? (ከእ ያንዳንዱ ምላሽ በኋላ ሌላስ? እ ያሉ በመጠየቅ ምላሾችን ይዘርዝሩ)	በሰፈሩና በግቢው መጥፎ ሽታ እ ንዳይኖር ይረዳል =1 ተቅማጥና ሌሎች የሆድ ትላትሎችን ይከላከላል =2 ቤተሰቡ በቀን ውስጥ በተፈለገ ጊዜ መጠቀምን ባሕል ያስርጻል=3 ሌላ (ይጠቀስ)----------=99	
LO1	መፀዳጃ ቤቱ ከመኖሪ ቤት ያለው ዕርቀት (ርቀቱን በዕርምጃ ይለኩ)	መልሱን በሜትር ያስቀምጡ_____	
LO2	መጸዳጃ ቤቱ በጥቅም ላይ የዋለ መሆኑን ማስረጃ ይታይ (የዐይነ ምድር ምልክት ወይም ተጠቃሚወች የተመላለሱበት መንገድ) መፀዳጃ ቤቱ ግድግዳ አለው?	የለም=0; አለ=1 የለም=0; አለ=1	
LO3	መፀዳጃ ቤቱ ጣሪያ አለው?	የለም=0; አለ=1	
LO4	የመፀዳጃ ቤቱ መቀመጫ ቀዳዳው ክዳን አለው	የለም=0; አለ=1	
LO5	የዕጅ መታጠቢያ አለው?	የለም=0; አለ=1	
LO6	የዕጅ መታጠቢያው ዕቃ ውኃ አለው?	የለም=0; አለ=1	
LO7	በግቢው ውስጥ በየቦታው አይነምድር ይታይል?	የለም=0; አለ=1	
LO9	የመፀዳጃ ቤቱ ዐይነት	አፈር ወለል =1 በሲሚንቶ የተሠራ ስላብ =2 ከንጨት የተሠራ ወለል =3 ያልተሸፈን መፀዳጃ ቤት =4 ሌላ ካለ ይገለy_____ 99	
እ ንስሳት			
CT1	መኖሪያ ቤቱ ከብቶች አሉት?	የለም=0; አለ=1	
CT2	ከብቶች ሌሊት የት ያድራሉ? (በመመልከት ምላሹን ያረጋግጡ)	በመኖሪያ ቤት ውስጥ ከሰው ጋር ማደሪያ አለ=1 ለንስሳት የተለየ ማጆሪያ አለ=2	

TT 1	ከዚህ ቤት የዐይን ፀጉር የበቀለበት ሰው ኣለ?	የለም =0; አለ =1	መልሱ የለም ከሆነ ወደ TT3 ይለፉ
TT2	ስንት ሰዎች ፀጉር በቀለባቸው?	አነድ ሰው=1 ሁለት ሰው=2 ሦስት ሰዎች=3	
TT3	ከዚህ ቤት ውስጥ የዐይን ፀጉር ቀዶ ህክምና የተሠራለት ሰው አለ?	የለም =0; አለ =1	መልሱ የለም ከሆነ ወደ NLS 1 ይለፉ
TT4	ስንት ሰዎች ፀጉር ተሠራላቸው?	አነድ ሰው=1 ሁለት ሰው=2 ሦስት ሰዎች=3	

					Right Eye		Left Eye		Trichiasis surgery:		Visual Acuity	
					No=0; Yes=1		No=0; Yes=1					
ID. #		Name	**Sex** (M/F)	**Age** (years)	TT	CO	TT	CO	RE No=0; Yes=1	LE No=0; Yes=1	Right Eye	Left Eye
0	*1*											
0	*2*											

2. የዐይን ቆብ ቀዶ ህክምና አገልግሎት ያላገኙ ሰዎች

ቀአያ1	**የዐይን ፀጉር ከበቀለብት ስንት ጊዜ ሁነው?**	**ከ1 ዓመት በተች**=1 **ከ1-5 ዓመት**=2 **ከ5-10 ዓዓመት**=3 **ከ10 ዓመት በላይ** =4	
ቀአያ1	**በትራኮማ የሚመጣ የዐይን ጸጉር መብቀል ምንድን ነው?**	**አላውቅም=0** **የዐይን ሽፋሽፍት የዐይን ኩዋስን መጫር**=1 **ጸጉር ዓይን ኩዋስ ላይ መብቀል**=2 **በዘር የሚመጣ የዐይን ችግር=3** **ከአምላክ የመጣ ርግማ"** =4 **ሌላ ይጠቀስ----------** =99	**መልሱ የለም ከሆነ ወደ ቀህ 1 ይለፉ**
ቀአያ 2	**በትራኮማ የሚመጣ የዐይን ጸጉር መብቀል ምን ሊያድነው ይችላል? (ከሚሰጥዎት ምላሽ በመቀጠል ሌላስ በማለት መልሶችን ያክብቡ)**	**አላውቅም**=0 **ፀበል**=1 **የባሕል መድኒሃኒት**=2 **ሕክምና**=3 **ቀዶ ህክምና**=4 **ፀሎት**=5 **አዋቂ (ጠንቋይ)** =6 **ሌላ (ይጠቀስ) _____** =99	**መልሱ የለም ከሆነ ወደ ቀህ 1 ይለፉ**
ቀአያ 3	**በትራኮማ የሚመጣ የዐይን ጸጉር መብቀል ለማስተካከል አገልግሎቱ የት ይሰጣል?**	**አላውቅም**=0 **ጤና ኬላ**=1 **ጤና ጣቢያ** =2 **ሆስፒ ል** =4 **ሌላ ይጠቀስ ----------**=99	**መልሱ አላውቅም ከሆ ወደ ቀህ 1 ይለፉ**
ቀአያ 4	**አገልግሎቱን ማን ይሰጣል?**	**አላውቅም**=0 **የአካባቢው ጤና ሙያተኞች** =1 **የዐይን ስፔሻሊስቶች** =2 **ፈረንጆች** =3 **የባሕል መድሓኒት አዋቂች** =4 **ሌላ (ይጠቀስ)----------**= 99	
ቀአያ 5	**ለምን የዐይን ቆብ ቀዶ ህክምና አገልግሎት አላገኙም? (ከ ያንዳንዱ ምላሽ በኋላ ሌላስ? ***ያሉ*** ይጠይቁ)**	**ችግሩ ያለብኝ መሆኑን አላውቅም=0** **ስለ አገልግሎቱ መኖር አላውቅም**=1 **ያለኝ ችግር ከባድ ስላልሆነ** =2	
ቀአያ 6		**አገልግሎት መስጫ ቦታው ሩቅ ስለሆነ** =3 **ለመጓጓዣ የሚሆን ገንዘብ ስለሌለኝ** =4 **ቀዶ ህክምናውን ስለምፈራ** =5 **ከቤት ሥራ ሚረዳኝ ስለሌለኝ** =6 **ለሕክምና ገንዘብ ስለሌለኝ=7** **መሪ ስለሌለኝ=8** **ሌላ (ይጠቀስ)----------**=99	
ቀአያ 7	**የዐይን ጸጉር መብቀል ምን ችግር አስከተለብ (ከእ ያንዳንዱ ምላሽ በኋላ ሌላስ? እ ***ያሉ*** ይጠይቁ)**	**ምንም**=0 **ሚያሰቃይ ሕመም** =1 **እ ይታ መቀነስ** =2 **እ ርሻ ሥራየ ተስተጓጎለ**=3 **ምግብ ማበሰል አልቻልሁም**=4 **ውኂ መቅዳት ከልክሉኛል** r=5 **ሕዝባዊ ስብሰባችን ለመካፈል አልችልም**=6 **ገበያ መሄድ ከልክሉኛል**=7 **ሌላ (ይጠቀስ)----------** =99	
ቀአያ 8	**ቃለ መጠይቅ ለሚደረግላቸው በሙሉ ዕ ይታ እ የተሰላ በስተቀኝ ባለው ክፍት ቦታ ይጻፉ** **የዐይን ኩዋስን የሚነኩ የዐይን ፀጉር ቆጥረው ይመዝግ 0 ፀጉር= 0** **፤ ከ1-5 ፀጉር=1፤ ከ5-10= 2፤ ከ10 በላይ=3**	**----------ቀኝ ዓይን** **---------- ግራ ዓይን** **---------- ቀኝ ዓይን** **---------- ግራ ዓይን**	

ተ.ቁ---------- ቀበሌ---------- ልማት ቡድን/ ጎጥ----------

					Right Eye		Left Eye		Trichiasis surgery:		Visual Acuity	
					No=0; Yes=1		No=0; Yes=1					
ID. #		Name	Sex (M/F)	Age (years)	TT	CO	TT	CO	RE No=0; Yes=1	LE No=0; Yes=1	Right Eye	Left Eye
0	1											
0	2											

3. ቀዶ ህክና ለተሠራላቸው			
ቀህ 1	ከዚህ ቤት የዐይን ቆብ ቀዶ ህክምና የተሠራላቸው አሉ?	የለም=0 አለ =1	መልሱ የለም ከሆነ የጥያቄው መጨረሻ
ቀህ 2	ቀዶ ሕክምና ከተሠራልት ስንት ጊዜ ሆነው?	----------(በወር ይጠቀስ)	
ቀህ 3	የዐይን ቆብ ቀዶ ህክምና የተሠራለት የት ነው?	ሆስፒታል=1 አቅራቢያው ጤና ጣቢያ =2 አቅራቢያው ጤና ኬላ=3 ሌላ (ይጠቀስ)----------=99	
ቀህ 4	ቀዶ ህክምናውን ንዴት ሊሠሩ ቻሉ? (ከአንዱ መልስ በኋላ ሌላስ? ያሉ በመጠየቅ መልሶችን ያክብቡ)	ተሠርቶ የመጣ ሰው ነግሮኝ=1 ተማሪ ልጅ ነግሮኝ/ነግራኝ=2 ባለቤቴ ነግራኝ ነግሮኝ=3 ጤና ሙያተኛ ነግሮኝ=4 በመገናኛ ብዙሃን ሰምቸ=5 የቀበሌ ጤና ተጠሪዎች ነግረውኝ=6 የቀበሌ አመራሮች ነግረውኝ=7 በዕምነት ቦታ ተነግሮኝ=8 ሌላ (ይጠቀስ)----------99	
ቀህ 5	የዐይን ቆብ ቀዶ ህክምና ከተሠሩ በኋላ ምን ጥቅም አገኙ (ከእ ያንዳንዱ ምላሽ በኋላ ሌላስ? እ ያሉ ይጠይቁ)	ምንም =0 ስቃይ ቀንሷል =1 ዕይታየ ተሸሻለ =2 የዕለት ተዕለት ሥራየን መሥራት ቻልሀ =3 ሌላ (ይጠቀስ) ---------- =99	
ቀህ 6	ከቀዶ ህክምና በኋላ የመጣ የዐይን ጸጉር	የለም=0 አለ=1	
ቀህ 7	ቪያደገ ያለ ሕዋስ/ስጋ	የለም =0 አለ=1	
	የተንሻፈፈ የዐይን ሽፋን አገጣጠም	የለም =0 አለ =1 ሌላ ካለ ይጠቀስ _____ ___99	

Annex III: Consent

Household Questionnaire

Name of Enumerator: _____
Date: _____
Questionnaire No.:_____
Time Start: _____
Village Name: _____

Introduction
[Enumerator: Read the following introductory statement.]

My name is_____ and I am working on a survey about trachoma in Yelmana Densa Woreda. We are interested in learning how people feel about trachomatous trichiasis surgery in the trachoma prevention and control Program. This research will help the community, the health bureau, government and donor agencies to address the problems on trachoma and to address problems encountered while the program run, what people most want for such your areas. We are interviewing & examining eye lids of different residents in a randomly selected house holds in Yemana Densa . The interview & eye lid examination will be completely confidential, and if at any time you wish to stop the interview and/or the eye lid examination or not answer a specific question, this is entirely your right. The interview will take less than one hour.

Would you be willing to be interviewed and eye lids examined?
____ (0) No (STOP THE INTERVIEW) ____ (1) Yes

የስምምነት ማረጋገጫ

የቃለ መጠይቅ አቅራቢው ስም----------

ቀን----------

የቃለ መጠይቁ ተራ ቁጥር----------

ስዓት

የቀበሌው ስም

መመሪያ፡ ቃለ መጠይቅ አቅራቢው ቀጥሎ ያለውን መልዕክት ለተጠያቂው ያንብቡ፡፡

ስሜ---------- ይባላል፡፡ የምሠራው በይልማና ዴንሳ ወረዳ ስለ ትራኮማ በሽታ በሚካሄድ ጥናት ተሳ ፊ በመሆን ነው፡፡ በዚህ ጥናት ነዋሪች በትራኮማ በሽታ ለሚመጣው የዐይ ፀጉር ችግር በትራኮማ ቁጥጥር ስለሚካሄደው የዐይን ቆብ ቀዶ ህክምና አገልግሎት ሕብረተሰቡ ምን እንደሚሰማው ለማወቅ እንፈልጋለን፡፡ ከጥናቱ በሚገኘው ውጤት ሕብረተሰቡ፤ ጤና ቢሮው፤ መንግሥት ዕርዳታ ሰጭዎች አገልግሎቱን በሚሰጡበት ወቅት ሊያተኩሩባቸው የሚገቡ ችግሮችና መፍትሄዎቻቸው ይጠቆማሉ፡፡ የጥናት ሥራውን ስናካሂድ በዕጣ ለተመረጡ ቤተሰብ ነዋሪዎች ቃለ መጠይቆችን እናቀርባለን የዐይን ምርመራ እናካሂዳለን፡፡ የቃለመጠይቁ ምላሾችና የዐይን ምርመራው ውጤቶች በሚስጢር ይጠበቃሉ፡፡ ቃለ መጠይቁ ወይም የዐይን ምርመራው እየተካሄደ እያለ በከፊል ወይም ሙሉ በሙሉ ለማቋር ቢፈልጉ መብት የተጠበቀ ነው፡፡ ቃለ መጠይቁ ከአንድ ስዓት ያነሰ ጊዜ ይወስዳል፡፡

ስለዚህ ቃለ መጠይቁን ብናካሂድ የዐይን ምርመራም ብናደርግ ፈቃደኛ ነት?

(0) አይደለሁም--------(1) ነኝ -------(አደለሁም ካሉ ቃለ መጠይቁንና ምርመራውን ያቋርጡ)

Declaration

I, the undersigned, senior MPH student declare that this thesis is my original work in partial fulfillment of the requirement for the degree of Master of Public Health.

Name : **Mulat Zerihun**

Signature: _____

Place of submission: School of Public Health, College of medicine and Health Sciences, University of Gondar.

Date of Submission: **December, 2010**

This thesis work has been submitted for examination with my/our approval as university advisor(s).

Advisors

	Name	**Signature**
1.	_____	_____
2.	_____	_____